

## CLAIMS

1 1. A PDP production method comprising:

2 a fluorescent substance application step for applying  
3 fluorescent substances to at least one of: a side of a front  
4 panel facing a back panel; and a side of the back panel facing  
5 the front panel; and

6 a heating step for heating either or both of the front  
7 panel and the back panel to which the fluorescent substances  
8 have been applied, wherein

9 the heating step is performed while the applied  
10 fluorescent substances are in contact with a dry gas.

1 2. The PDP production method of Claim 1, wherein

2 the heating step functions as a fluorescent substance  
3 baking step in which the fluorescent substance applied in the  
4 fluorescent substance application step is baked.

1 3. A PDP production method comprising:

2 a sealing material temporary baking step for applying  
3 fluorescent substances and a sealing material to at least one  
4 of: a side of a front panel facing a back panel; and a side of  
5 the back panel facing the front panel, then temporarily baking  
6 at a temporary baking temperature either or both of the front  
7 panel and the back panel to which the fluorescent substances and

8 the sealing material have been applied, wherein

9 the sealing material temporary baking step is  
10 performed while the applied fluorescent substances are in  
11 contact with a dry gas.

1 4. A PDP production method comprising:

2 a fluorescent substance application step for applying  
3 fluorescent substances to one of: a side of a front panel facing  
4 a back panel; and a side of the back panel facing the front  
5 panel;

6 a sealing material application step for applying a  
7 sealing material to the other one of the sides of the front  
8 panel and the back panel to which the fluorescent substances are  
9 not applied; and

10 a sealing material temporary baking step for  
11 temporarily baking the front panel and the back panel by  
12 maintaining a temporary baking temperature for the sealing  
13 material, wherein

14 the sealing material temporary baking step is  
15 performed while the applied fluorescent substances are in  
16 contact with a dry gas.

1 5. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a

4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 a sealing material layer forming step for forming a  
7 sealing material layer on at least one of: the side of the front  
8 panel facing the back panel; and the side of the back panel  
9 facing the front panel; and

10 a bonding step for, after the fluorescent substance  
11 layer forming step and the sealing material layer forming step,  
12 putting the front panel and the back panel together to form  
13 inner space between the panels, and bonding the front panel and  
14 the back panel by maintaining a bonding temperature equal to or  
15 higher than a temperature at which the sealing material softens,  
16 wherein

17 the bonding step is performed while the fluorescent  
18 substance layer is in contact with a dry gas.

1 6. The PDP production method of Claim 5, wherein

2 the bonding step is performed while the dry gas is  
3 circulated in the inner space.

1 7. The PDP production method of Claim 5, wherein

2 the bonding step is performed while an operation of  
3 charging the dry gas into the inner space and an operation of  
4 exhausting gases from the inner space are performed  
5 alternately.

1 8. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a  
4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 a bonding step for, after the fluorescent substance  
7 layer forming step, putting the front panel and the back panel  
8 together to form inner space between the panels, and bonding the  
9 front panel and the back panel; and

10 a heating step for heating the bonded front panel and  
11 the back panel to a temperature higher than a room temperature  
12 while a dry gas is circulated in the inner space.

1 9. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a  
4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 a bonding step for, after the fluorescent substance  
7 layer forming step, putting the front panel and the back panel  
8 together to form inner space between the panels, and bonding the  
9 front panel and the back panel; and

10 an exhausting step for exhausting gases from the inner  
11 space while an exhaust temperature for the bonded panels higher

12 than a room temperature is maintained, wherein  
13 the exhausting step is performed while the fluorescent  
14 substance layer is in contact with a dry gas.

1 10. A PDP production method comprising:

2 an MgO layer forming step for forming an MgO layer on  
3 at least one of: a side of a front panel facing a back panel;  
4 and a side of the back panel facing the front panel;

5 a heating step for heating either or both of the front  
6 panel and the back panel on which the MgO layer has been formed,  
7 wherein

8 the heating step is performed while the MgO layer is  
9 in contact with a dry gas.

1 11. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a  
4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 an MgO layer forming step for forming an MgO layer on  
7 at least one of: the side of the front panel facing the back  
8 panel; and the side of the back panel facing the front panel;  
9 and

10 a heating step for, after the fluorescent substance  
11 layer forming step and the MgO layer forming step, heating the

12 front panel and the back panel, wherein

13 the heating step is performed while the MgO layer and  
14 the fluorescent substance layer are in contact with a dry gas.

1 12. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a  
4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 an MgO layer forming step for forming an MgO layer on  
7 at least one of: the side of the front panel facing the back  
8 panel; and the side of the back panel facing the front panel;

9 a sealing material layer forming step for forming a  
10 sealing material layer on at least one of: the side of the front  
11 panel facing the back panel; and the side of the back panel  
12 facing the front panel; and

13 a bonding step for, after the fluorescent substance  
14 layer forming step, the MgO layer forming step, and the sealing  
15 material layer forming step, putting the front panel and the  
16 back panel together to form inner space between the panels, and  
17 bonding the front panel and the back panel by maintaining a  
18 bonding temperature equal to or higher than a temperature at  
19 which the sealing material softens, wherein

20 the bonding step is performed while a dry gas is  
21 supplied to the inner space.

1 13. The PDP production method of Claim 6, wherein  
2 the bonding step is performed while the dry gas is  
3 circulated in the inner space and a pressure inside the inner  
4 space is maintained a bonding pressure lower than atmospheric  
5 pressure.

1 14. The PDP production method of Claim 13, wherein  
2 the bonding pressure is 500Torr or lower.

1 15. The PDP production method of Claim 13, wherein  
2 the bonding pressure is 300Torr or lower.

1 16. The PDP production method of Claim 13, wherein  
2 the front panel and the back panel are heated while  
3 the fluorescent substance layer is under a pressure higher than  
4 the bonding pressure, then a gas pressure in the inner space is  
5 reduced to the bonding pressure, and the bonding step is started  
6 in this condition.

1 17. The PDP production method of Claim 16, wherein  
2 the front panel and the back panel are heated to a  
3 temperature equal to or higher than a softening point of the  
4 sealing material while the fluorescent substance layer is under  
5 a pressure higher than the bonding pressure, then a gas pressure

6 in the inner space is reduced to the bonding pressure, and the  
7 bonding step is started in this condition.

1 18. The PDP production method of Claim 16, wherein  
2 the front panel and the back panel are heated to 300°C  
3 or higher while the fluorescent substance layer is under a  
4 pressure higher than the bonding pressure, then a gas pressure  
5 in the inner space is reduced to the bonding pressure, and the  
6 bonding step is started in this condition.

1 19. The PDP production method of Claim 16, wherein  
2 the front panel and the back panel are heated to 350°C  
3 or higher while the fluorescent substance layer is under a  
4 pressure higher than the bonding pressure, then a gas pressure  
5 in the inner space is reduced to the bonding pressure, and the  
6 bonding step is started in this condition.

1 20. The PDP production method of Claim 16, wherein  
2 the front panel and the back panel are heated to 400°C  
3 or higher while the fluorescent substance layer is under a  
4 pressure higher than the bonding pressure, then a gas pressure  
5 in the inner space is reduced to the bonding pressure, and the  
6 bonding step is started in this condition.

1 21. The PDP production method of Claim 13, wherein



2           in the bonding step, gases are forcibly exhausted from  
3 the inner space.

1 22. The PDP production method of Claim 6, wherein

2           in the sealing material layer forming step, the  
3 sealing material layer is formed in a frame shape at an outer  
4 region of at least one of: the side of the front panel facing  
5 the back panel; and the side of the back panel facing the front  
6 panel, and

7           a plurality of partition walls are formed in stripes,  
8 before the bonding step, on one of: the side of the front panel  
9 facing the back panel; and the side of the back panel facing the  
10 front panel so that the plurality of partition walls are inside  
11 the sealing material layer and that a pair of first gaps are  
12 formed between edges of the plurality of partition walls and two  
13 inside sides of the sealing material layer, wherein the minimum  
14 width of the pair of first gaps is larger than the minimum width  
15 of a pair of second gaps between two outermost ones of the  
16 plurality of partition walls and the other sides of the sealing  
17 material layer, and

18           in the bonding step, the dry gas moves from one of the  
19 pair of first gaps to the other.

1 23. The PDP production method of Claim 6, wherein

2           in the sealing material layer forming step, the

3 sealing material layer is formed in a frame shape at an outer  
4 region of at least one of: the side of the front panel facing  
5 the back panel; and the side of the back panel facing the front  
6 panel, and

7 a plurality of first partition walls are formed in  
8 stripes, before the bonding step, on one of: the side of the  
9 front panel facing the back panel; and the side of the back  
10 panel facing the front panel so that the plurality of partition  
11 walls are inside a second partition wall which is formed to be  
12 in contact with inside of the sealing material layer and that a  
13 pair of first gaps are formed between edges of the plurality of  
14 partition walls and two inside sides of the second partition  
15 wall, wherein the minimum width of the pair of first gaps is  
16 larger than the minimum width of a pair of second gaps between  
17 two outermost ones of the plurality of partition walls and the  
18 other sides of the second partition wall, and

19 in the bonding step, the dry gas moves from one of the  
20 pair of first gaps to the other.

1 24. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a  
4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 a sealing material layer forming step for forming a

7 sealing material layer on at least one of: the side of the front  
8 panel facing the back panel; and the side of the back panel  
9 facing the front panel;

10 a preparative heating step for, after the fluorescent  
11 substance layer forming step and the sealing material layer  
12 forming step, heating the front panel and the back panel while  
13 a space is opened between the sides of the panels facing each  
14 other; and

15 a bonding step for, immediately after the preparative  
16 heating step, putting the front panel and the back panel  
17 together to form inner space between the panels, and bonding the  
18 front panel and the back panel by maintaining a bonding  
19 temperature equal to or higher than a softening point of the  
20 sealing material.

1 25. The PDP production method of Claim 24, wherein

2 in the preparative heating step, the front panel and  
3 the back panel are heated to a temperature lower than the  
4 softening point of the sealing material, and

5 in the bonding step, the panels are put together and  
6 heated to the bonding temperature to be bonded together.

1 26. The PDP production method of Claim 24, wherein

2 in the preparative heating step, the front panel and  
3 the back panel are heated to a temperature higher than the

4 bonding temperature, and

5 the front panel and the back panel are cooled to the

6 bonding temperature then the bonding step is started.

1 27. The PDP production method of Claim 24, wherein

2 the preparative heating step is performed while the

3 front panel and the back panel are under a pressure lower than

4 an atmospheric pressure.

1 28. The PDP production method of Claim 24, wherein

2 the preparative heating step is performed while the

3 front panel and the back panel are in an atmosphere of dry

4 gas.

1 29. The PDP production method of Claim 28, wherein

2 the preparative heating step is performed while the

3 front panel and the back panel are in an atmosphere in which a

4 dry gas is circulated.

1 30. The PDP production method of Claim 24, wherein

2 the preparative heating step is performed while gases

3 released from the front panel and the back panel when the panels

4 are heated are forcibly exhausted to outside.

1 31. The PDP production method of Claim 24 further comprising:

2           a separating step for properly positioning the front  
3 panel and the back panel, putting the panels together, and  
4 separating the front panel and the back panel from each other by  
5 moving the panels along a certain path, the separating step  
6 being performed before the preparative heating step, wherein  
7           in the bonding step, the front panel and the back  
8 panel are put together by moving the panels in a direction  
9 opposite to a movement along the certain path of the separating  
10 step.

1   32. The PDP production method of Claim 31, wherein  
2           in the separating step and the bonding step, the front  
3 panel and the back panel are moved to positions parallel to  
4 themselves.

1   33. The PDP production method of Claim 24, wherein  
2           in the preparative heating step, the front panel and  
3 the back panel are heated to 200°C or higher.

1   34. The PDP production method of Claim 24, wherein  
2           in the preparative heating step, the front panel and  
3 the back panel are heated to 300°C or higher.

1   35. The PDP production method of Claim 24, wherein  
2           in the preparative heating step, the front panel and

3 the back panel are heated to a temperature in a range of 300°C  
4 to 400°C.

1 36. The PDP production method of Claim 24, wherein  
2 in the preparative heating step, the front panel and  
3 the back panel are heated to 400°C or higher.

1 37. The PDP production method of Claim 24, wherein  
2 in the preparative heating step, the front panel and  
3 the back panel are heated to a temperature in a range of 450°C  
4 to 520°C.

1 38. The PDP production method of Claim 24, wherein  
2 in the sealing material layer forming step, the  
3 sealing material layer is formed on both of: the side of the  
4 front panel facing the back panel; and the side of the back  
5 panel facing the front panel, and  
6 in the bonding step, the front panel and the back  
7 panel are put together by matching the sealing material layers  
8 formed on the panels to each other.

1 39. A PDP production method comprising:  
2 a sealing material layer forming step for forming a  
3 sealing material layer on both of: a side of a front panel  
4 facing a back panel; and a side of the back panel facing the

5 front panel; and

6 a bonding step for bonding the front panel and the  
7 back panel by matching the sealing material layers formed on the  
8 panels to each other.

1 40. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a  
4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 a sealing material application step for applying a  
7 sealing material to at least one of: the side of the front panel  
8 facing the back panel; and the side of the back panel facing the  
9 front panel;

10 a bonding step for, after the fluorescent substance  
11 layer forming step and the sealing material application step,  
12 putting the front panel and the back panel together to form  
13 inner space between the panels, and bonding the front panel and  
14 the back panel by maintaining a bonding temperature equal to or  
15 higher than a softening point of the sealing material; and

16 an exhausting step for exhausting gases from the inner  
17 space while an exhaust temperature for the bonded panels higher  
18 than a room temperature is maintained, wherein

19 the exhausting step is started without cooling the  
20 front panel and the back panel bonded in the bonding step to the

21 room temperature.

1 41. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a  
4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 a sealing material application step for applying a  
7 sealing material to at least one of: the side of the front panel  
8 facing the back panel; and the side of the back panel facing the  
9 front panel;

10 a sealing material temporary baking step for  
11 temporarily baking either or both of the front panel and the  
12 back panel to which the sealing material has been applied by  
13 maintaining a temporary baking temperature; and

14 a bonding step for, after the fluorescent substance  
15 layer forming step and the sealing material temporary baking  
16 step, putting the front panel and the back panel together to  
17 form inner space between the panels, and bonding the front panel  
18 and the back panel by maintaining a bonding temperature equal to  
19 or higher than a softening point of the sealing material,  
20 wherein

21 the bonding step is started without cooling to a room  
22 temperature the one or two panels whose temporary baking  
23 temperature has been maintained during the sealing material



24 temporary baking step.

1 42. A PDP production method comprising:

2 a fluorescent substance layer forming step for forming  
3 a fluorescent substance layer on at least one of: a side of a  
4 front panel facing a back panel; and a side of the back panel  
5 facing the front panel;

6 a sealing material application step for applying a  
7 sealing material to at least one of: the side of the front panel  
8 facing the back panel; and the side of the back panel facing the  
9 front panel;

10 a sealing material temporary baking step for  
11 temporarily baking either or both of the front panel and the  
12 back panel to which the sealing material has been applied by  
13 maintaining a temporary baking temperature;

14 a bonding step for, after the fluorescent substance  
15 layer forming step and the sealing material temporary baking  
16 step, putting the front panel and the back panel together to  
17 form inner space between the panels, and bonding the front panel  
18 and the back panel by maintaining a bonding temperature equal to  
19 or higher than a softening point of the sealing material; and

20 an exhausting step for exhausting gases from the inner  
21 space while an exhaust temperature for the bonded panels higher  
22 than a room temperature is maintained, wherein

23 the front panel and the back panel are maintained in

24 a temperature higher than a room temperature through all steps  
25 from the sealing material temporary baking step to the  
26 exhausting step.

1 43. The PDP production method of Claim 41 or Claim 42,  
2 wherein

3 the bonding step is started after the one or two  
4 panels whose temporary baking temperature has been maintained  
5 during the sealing material temporary baking step are heated to  
6 the bonding temperature.

1 44. The PDP production method of Claim 40 or Claim 42,  
2 wherein

3 the exhausting step is started after the bonded front  
4 panel and the back panel are cooled to the exhaust  
5 temperature.

1 45. The PDP production method of Claim 40 or Claim 42,  
2 wherein

3 the exhausting step is started after the bonded front  
4 panel and the back panel are maintained in the bonding  
5 temperature.

1 46. The PDP production method of Claim 41 or Claim 42,  
2 wherein

3           the sealing material temporary baking step is  
4 performed while a space is opened between the sides of the  
5 panels facing each other, and

6           the PDP production method further comprises between  
7 the sealing material temporary baking step and the bonding  
8 step:

9           a preparative heating step for heating the front panel  
10 and the back panel while a space is opened between the sides of  
11 the panels facing each other.

1   47. The PDP production method of Claim 46, wherein

2           in the preparative heating step, the front panel and  
3 the back panel are heated to a temperature higher than the  
4 temporary baking temperature.

1   48. The PDP production method of Claim 46, wherein

2           in the preparative heating step, the front panel and  
3 the back panel are heated to a temperature higher than the  
4 temporary baking temperature, and then

5           the bonding step is started after the front panel and  
6 the back panel are cooled to the bonding temperature.

1   49. The PDP production method of Claim 46, wherein

2           the preparative heating step is performed under a  
3 pressure lower than an atmospheric pressure.

1 50. The PDP production method of Claim 46, wherein  
2 the preparative heating step is performed in an  
3 atmosphere of dry gas.

1 51. The PDP production method of one of Claims 40 to 42,  
2 wherein  
3 the bonding step is performed while a dry gas is  
4 circulated in the inner space.

1 52. The PDP production method of Claim 41 or Claim 42,  
2 wherein  
3 in the sealing material temporary baking step, the  
4 front panel and the back panel are put together to form inner  
5 space between the panels, and the sealing material temporary  
6 baking step is performed while a dry gas is circulated in the  
7 inner space.

1 53. A PDP production method comprising:  
2 a bonding step for putting the front panel and the  
3 back panel together to form inner space between the panels, and  
4 bonding the front panel and the back panel by maintaining a  
5 bonding temperature equal to or higher than a softening point of  
6 the sealing material; and  
7 an exhausting step for exhausting gases from the inner

8 space while an exhaust temperature for the bonded panels higher  
9 than a room temperature is maintained, wherein  
10 the exhaust temperature is 360°C or higher.

1 54. A PDP production method comprising:

2 a bonding step for putting the front panel and the  
3 back panel together to form inner space between the panels, and  
4 bonding the front panel and the back panel by maintaining a  
5 bonding temperature equal to or higher than a softening point of  
6 the sealing material; and

7 an exhausting step for exhausting gases from the inner  
8 space while an exhaust temperature for the bonded panels higher  
9 than a room temperature is maintained, wherein  
10 the exhaust temperature is 380°C or higher.

1 55. A PDP production method comprising:

2 a bonding step for putting the front panel and the  
3 back panel together to form inner space between the panels, and  
4 bonding the front panel and the back panel by maintaining a  
5 bonding temperature equal to or higher than a softening point of  
6 the sealing material; and

7 an exhausting step for exhausting gases from the inner  
8 space while an exhaust temperature for the bonded panels higher  
9 than a room temperature is maintained, wherein  
10 the exhaust temperature is 400°C or higher.

1 56. A PDP production method comprising:

2 a bonding step for putting the front panel and the  
3 back panel together to form inner space between the panels, and  
4 bonding the front panel and the back panel by maintaining a  
5 bonding temperature equal to or higher than a softening point of  
6 the sealing material; and

7 an exhausting step for exhausting gases from the inner  
8 space while an exhaust temperature for the bonded panels higher  
9 than a room temperature is maintained, wherein

10 the bonded front panel and the back panel are heated  
11 to a predetermined temperature while a dry gas is circulated in  
12 the inner space, then the exhausting step is started.

1 57. The PDP production method of Claim 56, wherein

2 the predetermined temperature is equal to or higher  
3 than the exhaust temperature.

1 58. The PDP production method of Claim 56, wherein

2 at least one of the predetermined temperature and the  
3 exhaust temperature is 360°C or higher.

1 59. The PDP production method of Claim 56, wherein

2 at least one of the predetermined temperature and the  
3 exhaust temperature is 380°C or higher.

1 60. The PDP production method of Claim 56, wherein  
2 at least one of the predetermined temperature and the  
3 exhaust temperature is 400°C or higher.

1 61. The PDP production method of one of Claims 1 to 23, 28, 50,  
2 51, and 56, wherein  
3 partial pressure of steam vapor in the dry gas is  
4 15Torr or less in an atmosphere in which the dry gas is used.

1 62. The PDP production method of one of Claims 1 to 23, 28, 50,  
2 51, and 56, wherein  
3 the dew-point temperature of the dry gas is 20°C or  
4 lower.

1 63. The PDP production method of one of Claims 1 to 23, 28, 50,  
2 51, and 56, wherein  
3 the dry gas contains oxygen.

1 64. The PDP production method of one of Claims 1 to 23, 28, 50,  
2 51, and 56, wherein  
3 the dry gas is dry air.

1 65. A PDP produced in accordance with the PDP production method  
2 of one of Claims 1 to 42 and Claims 52 to 60.

1 66. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 the chromaticity coordinate  $y$  in the CIE color  
7 specification of light emitted from the blue cells when light is  
8 emitted from only the blue cells is 0.08 or less.

1 67. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 the chromaticity coordinate  $y$  in the CIE color  
7 specification of light emitted from the blue cells when light is  
8 emitted from only the blue cells is 0.07 or less.

1 68. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 the chromaticity coordinate  $y$  in the CIE color



7 specification of light emitted from the blue cells when light is  
8 emitted from only the blue cells is 0.06 or less.

1 69. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 the chromaticity coordinate  $y$  in the CIE color  
7 specification of light emitted from the blue cells when vacuum  
8 ultraviolet rays are radiated onto the blue cells to excite the  
9 blue cells is 0.08 or less.

1 70. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 the chromaticity coordinate  $y$  in the CIE color  
7 specification of light emitted from the blue cells when vacuum  
8 ultraviolet rays are radiated onto the blue cells to excite the  
9 blue cells is 0.07 or less.

1 71. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells

3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 the chromaticity coordinate  $y$  in the CIE color  
7 specification of light emitted from the blue cells when vacuum  
8 ultraviolet rays are radiated onto the blue cells to excite the  
9 blue cells is 0.06 or less.

1 72. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 a peak wavelength of a spectrum of light emitted from  
7 the blue cells when light is emitted from only the blue cells is  
8 455nm or less.

1 73. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 a peak wavelength of a spectrum of light emitted from  
7 the blue cells when light is emitted from only the blue cells is  
8 453nm or less.

1 74. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 a peak wavelength of a spectrum of light emitted from  
7 the blue cells when light is emitted from only the blue cells is  
8 451nm or less.

1 75. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein

6 when light is emitted from all of the plurality of  
7 cells, color temperature of the emitted light is 7,000K or  
8 more.

1 76. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, wherein each of the plurality  
3 of cells includes a fluorescent substance layer and is filled  
4 with a gas medium, wherein

5 a color temperature of light emitted from the  
6 plurality of cells when vacuum ultraviolet rays are radiated

7 onto the fluorescent substance layers the plurality of cells is  
8 7,000K or more.

1 77. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, the plurality of cells including  
5 green cells in each of which a green fluorescent substance layer  
6 is formed, and the plurality of cells being filled with a gas  
7 medium, wherein

8 a ratio of a peak intensity of spectrum of light  
9 emitted from the blue cells to a peak intensity of spectrum of  
10 light emitted from the green cells is 0.8 or more, wherein light  
11 is emitted from the blue cells and the green cells under the  
12 same condition.

1 78. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, the plurality of cells including  
5 green cells in each of which a green fluorescent substance layer  
6 is formed, and the plurality of cells being filled with a gas  
7 medium, wherein

8 a ratio of a peak intensity of spectrum of light  
9 emitted from the blue cells after the blue fluorescent substance

10 layers in the blue cells are excited by vacuum ultraviolet rays  
11 to a peak intensity of spectrum of light emitted from the green  
12 cells after the green fluorescent substance layers in the green  
13 cells are excited by the vacuum ultraviolet rays is 0.8 or  
14 more.

1 79. The PDP of one of Claims 66 to 78, wherein  
2 each of the plurality of cells corresponds to one of  
3 a plurality of colors, and  
4 a total area of cells corresponding to a color should  
5 be 1.3 times or less a total area of cells corresponding to  
6 another color at the maximum.

1 80. The PDP of one of Claims 66 to 78, wherein  
2 the blue fluorescent substance layer is made of  
3  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$ .

1 81. The PDP of one of Claim 80, wherein  
2 the green fluorescent substance layer is made of  
3  $\text{Zn}_2\text{SiO}_4$ .

1 82. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being

5 filled with a gas medium, wherein  
6 the blue fluorescent substance layer is made of  
7  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$ , and  
8 a ratio of c-axis length to a-axis length in crystal  
9 of the blue fluorescent substance layer is 4.0218 or less.

1 83. A PDP including a plurality of cells formed between a pair  
2 of panels parallel to each other, the plurality of cells  
3 including blue cells in each of which a blue fluorescent  
4 substance layer is formed, and the plurality of cells being  
5 filled with a gas medium, wherein  
6 the blue fluorescent substance layer is made of  
7  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$ , and  
8 a peak value in the number of molecules contained in  
9  $\text{H}_2\text{O}$  desorbed from the blue fluorescent substance layer at  $200^\circ\text{C}$   
10 or higher is  $1 \times 10^{16}$ /g or less when measured based on a TDS  
11 analysis method.

1 84. A PDP comprising:  
2 a pair of panels parallel to each other;  
3 a plurality of cells formed in between the pair of  
4 panels;  
5 a plurality of partition walls formed in between the  
6 pair of panels in stripes and partitioning the plurality of  
7 cells; and

8           a sealing material layer formed in between the pair  
9 of panels in a frame shape at an outer region of the pair of  
10 panels and bonding the pair of panels together, wherein  
11           a resistance to a gas flowing through each gap between  
12 the plurality of partition walls is greater than a resistance to  
13 a gas flowing through each of a pair of gaps between two  
14 outermost ones of the plurality of partition walls and the  
15 sealing material layer.

1   85. A PDP comprising:

2           a pair of panels parallel to each other;

3           a plurality of cells formed in between the pair of  
4 panels;

5           a plurality of partition walls formed in between the  
6 pair of panels in stripes and partitioning the plurality of  
7 cells; and

8           a sealing material layer formed in between the pair  
9 of panels in a frame shape at an outer region of an area between  
10 the pair of panels and bonding the pair of panels together,  
11 wherein

12           a pair of first gaps are formed between edges of the  
13 plurality of partition walls and two inner sides of the sealing  
14 material layer, and

15           the minimum width of the pair of first gaps is larger  
16 than the minimum width of a pair of second gaps between two

17 outermost ones of the plurality of partition walls and the other  
18 sides of the sealing material layer.

1 86. The PDP of Claim 85, wherein

2 the minimum width of the pair of first gaps is twice  
3 the minimum width of the pair of second gaps or more.

1 87. The PDP of Claim 85, wherein

2 the minimum width of the pair of first gaps is thrice  
3 the minimum width of the pair of second gaps or more.

1 88. A PDP comprising:

2 a pair of panels parallel to each other;

3 a plurality of cells formed in between the pair of  
4 panels;

5 a plurality of partition walls formed in between the  
6 pair of panels in stripes and partitioning the plurality of  
7 cells; and

8 a sealing material layer formed in between the pair  
9 of panels in a frame shape at an outer region of an area between  
10 the pair of panels and bonding the pair of panels together,  
11 wherein

12 a pair of first gaps are formed between edges of the  
13 plurality of partition walls and two inner sides of the sealing  
14 material layer, and



15           each of two outermost ones of the plurality of  
16 partition walls is in contact with the sealing material layer at  
17 least in part.

1   89. A PDP comprising:

2           a pair of panels parallel to each other;

3           a plurality of cells formed in between the pair of  
4 panels;

5           a plurality of first partition walls formed in between  
6 the pair of panels in stripes and partitioning the plurality of  
7 cells;

8           a sealing material layer formed in between the pair  
9 of panels in a frame shape at an outer region of an area between  
10 the pair of panels and bonding the pair of panels together;  
11 and

12           a second partition wall formed in between the pair of  
13 panels and being in contact with inside of the sealing material  
14 layer, wherein

15           a pair of first gaps are formed between edges of the  
16 plurality of first partition walls and two inner sides of the  
17 second partition wall, and

18           the minimum width of the pair of first gaps is larger  
19 than the minimum width of a pair of second gaps between two  
20 outermost ones of the plurality of partition walls and the other  
21 sides of the second partition wall.

1 90. The PDP of Claim 89, wherein

2 the minimum width of the pair of first gaps is twice  
3 the minimum width of the pair of second gaps or more.

1 91. The PDP of Claim 89, wherein

2 the minimum width of the pair of first gaps is thrice  
3 the minimum width of the pair of second gaps or more.

1 92. A PDP comprising:

2 a pair of panels parallel to each other;

3 a plurality of cells formed in between the pair of  
4 panels;

5 a plurality of first partition walls formed in between  
6 the pair of panels in stripes and partitioning the plurality of  
7 cells;

8 a sealing material layer formed in between the pair  
9 of panels in a frame shape at an outer region of an area between  
10 the pair of panels and bonding the pair of panels together;  
11 and

12 a second partition wall formed in between the pair of  
13 panels and being in contact with inside of the sealing material  
14 layer, wherein

15 a pair of first gaps are formed between edges of the  
16 plurality of first partition walls and two inner sides of the

17 second partition wall, and

18 each of two outermost ones of the plurality of first  
19 partition walls is in contact with the second partition wall at  
20 least in part.

1 93. A PDP production apparatus comprising:

2 a heating furnace for housing in itself a panel on  
3 which at least one of a fluorescent substance layer and an MgO  
4 layer is formed and heating the panel; and

5 a dry gas supplying mechanism for supplying a dry gas  
6 into the heating furnace to form a dry gas atmosphere in the  
7 heating furnace.

1 94. The PDP production apparatus of Claim 93 further  
2 comprising:

3 an exhausting mechanism for exhausting gases from the  
4 heating furnace to reduce a pressure in the heating furnace to  
5 a pressure lower than an atmospheric pressure.

1 95. A PDP production apparatus comprising:

2 a heating furnace for housing in itself a front panel  
3 and a back panel having been put together with a fluorescent  
4 substance layer formed on at least one of: a side of the front  
5 panel facing the back panel; and a side of the back panel facing  
6 the front panel, and heating the front panel and the back panel;

7 and

8 a dry gas supplying mechanism for supplying a dry gas  
9 into inner space between the front panel and the back panel.

1 96. The PDP production apparatus of Claim 95, wherein

2 the heating furnace houses the front panel and the  
3 back panel as the panels are put together to form the inner  
4 space between the panels, and the PDP production apparatus  
5 further comprises:

6 an exhausting mechanism for exhausting gases from the  
7 inner space.

1 97. The PDP production apparatus of one of Claims 93 to 96,  
2 wherein

3 partial pressure of steam vapor in the dry gas  
4 supplied by the dry gas supplying mechanism is 15Torr or less in  
5 an atmosphere in which the dry gas is used.

1 98. The PDP production apparatus of one of Claims 93 to 96,

2 wherein

3 the dew-point temperature of the dry gas supplied by  
4 the dry gas supplying mechanism is 20°C or lower.

1 99. A PDP production apparatus for putting a front panel and a

2 back panel together with a fluorescent substance layer formed on

3 at least one of: a side of the front panel facing the back  
4 panel; and a side of the back panel facing the front panel and  
5 with a sealing material formed between the front panel and the  
6 back panel, and bonding the panels to form inner space between  
7 the panels by heating the panels and softening the sealing  
8 material, the PDP production apparatus comprising:

9 a heating mechanism for heating the front panel and  
10 the back panel;

11 a moving mechanism for moving the front panel and the  
12 back panel having been put together to separate the panels from  
13 each other along a certain path and putting the front panel and  
14 the back panel by moving the panels in an opposite direction.

1 100. The PDP production apparatus of Claim 99 further  
2 comprising:

3 a chamber in which the front panel and the back panel  
4 are housed; and

5 an exhausting mechanism for exhausting gases from the  
6 chamber.

1 101. A PDP production apparatus for putting a front panel and  
2 a back panel together with a fluorescent substance layer formed  
3 on at least one of: a side of the front panel facing the back  
4 panel; and a side of the back panel facing the front panel and  
5 with a sealing material formed between the front panel and the

6 back panel, and bonding the panels by heating the panels and  
7 softening the sealing material, the PDP production apparatus  
8 comprising:

9 a chamber in which the front panel and the back panel  
10 are housed;

11 an exhausting mechanism for exhausting gases from the  
12 chamber; and

13 a heating mechanism for heating the front panel and  
14 the back panel housed in the chamber.

1 102. The PDP production apparatus of Claim 101 further  
2 comprising:

3 a dry gas supplying mechanism for supplying a dry gas  
4 into the chamber.

1 103. A PDP production apparatus for putting a front panel and  
2 a back panel together with a fluorescent substance layer formed  
3 on at least one of: a side of the front panel facing the back  
4 panel; and a side of the back panel facing the front panel and  
5 with a sealing material formed between the front panel and the  
6 back panel, and bonding the panels to form inner space between  
7 the panels by heating the panels and softening the sealing  
8 material, the PDP production apparatus comprising:

9 an exhausting mechanism for exhausting gases from the  
10 inner space; and

11           a heating mechanism for heating the front panel and  
12 the back panel.

1   104. The PDP production apparatus of one of Claim 103 further  
2 comprising:

3           a dry gas supplying mechanism for supplying a dry gas  
4 into inner space between the front panel and the back panel.

1   105. The PDP production apparatus of Claim 102 or Claim 104,  
2 wherein

3           partial pressure of steam vapor in the dry gas  
4 supplied by the dry gas supplying mechanism is 15Torr or less in  
5 an atmosphere in which the dry gas is used.

1   106. The PDP production apparatus of Claim 102 or Claim 104,  
2 wherein

3           the dew-point temperature of the dry gas supplied by  
4 the dry gas supplying mechanism is 20°C or lower.

1   107. The PDP production apparatus of Claim 102 or Claim 104,  
2 wherein

3           the dry gas supplied by the dry gas supplying  
4 mechanism contains oxygen.

1   108. The PDP production apparatus of Claim 102 or Claim 104,

2 wherein

3 the dry gas supplied by the dry gas supplying  
4 mechanism is dry air.

1 109. A PDP display apparatus comprising:

2 a PDP produced by the PDP production method of one of

3 Claims 1 to 42, 53 to 60; and

4 an activating circuit for activating the PDP.

1 110. A PDP display apparatus comprising:

2 the PDP of one of Claims 66 to 78; and

3 a activating circuit for activating the PDP.

1 111. A PDP display apparatus comprising:

2 the PDP of Claim 80; and

a activating circuit for activating the PDP.